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SCIENCE

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CONTENTS

| | |
|---|-----|
| <i>The Solar Constant of Radiation:</i> DR. C. G. ABBOT | 335 |
| <i>Seth Carlo Chandler:</i> DR. BENJAMIN BOSS ... | 348 |
| <i>The American Association for the Advancement of Science:—</i> | |
| <i>Report of the Associate Secretary for the South:</i> DR. R. M. OGDEN | 350 |
| <i>Minutes of the Second Meeting of the Pacific Coast Committee:</i> DR. E. P. LEWIS ... | 352 |
| <i>Scientific Notes and News</i> | 353 |
| <i>University and Educational News</i> | 356 |
| <i>Discussion and Correspondence:—</i> | |
| <i>Fossil Plants in the Panama Canal Zone:</i> DR. EDWARD W. BERRY. <i>What Grades Represent:</i> DR. P. N. EVANS | 357 |
| <i>Scientific Books:—</i> | |
| <i>Coulter's Elementary Studies in Botany:</i> PROFESSOR CHARLES E. BESSEY. <i>Park on "The Evil Eye":</i> PROFESSOR T. D. A. COCKERELL | 358 |
| <i>Beetles becoming Parasites:</i> PROFESSOR VERNON L. KELLOGG | 360 |
| <i>Special Articles:—</i> | |
| <i>The Decomposition of Soil Carbonates:</i> W. H. MCINTIRE | 361 |
| <i>The American Association for the Advancement of Science:—</i> | |
| <i>Section C—Chemistry:</i> DR. JOHN JOHNSTON. | 362 |
| <i>Section F—Zoology:</i> PROFESSOR H. V. NEAL | 364 |
| <i>Societies and Academies:—</i> | |
| <i>The American Physical Society:</i> PROFESSOR A. D. COLE. <i>The American Psychological Society:</i> PROFESSOR H. L. HOLLINGWORTH. | 370 |

THE SOLAR CONSTANT OF RADIATION¹

WE live in a world warmed by the sun. While it is not to be expected that everybody will devote himself to the measurement of solar radiation, yet it is not surprising that many have concerned themselves with measuring the quantity on which all lives depend. So far as I am aware, this subject was not pursued by the ancients to such a point as to obtain measurements worth much present consideration. This is a great pity, for thus we lack proof whether the sun's radiation has changed progressively. Beginning about a century ago investigations of solar radiation were pursued with great assiduity by various observers. The need was almost immediately perceived of reducing the observations to represent conditions outside the earth's atmosphere, as, for example, on the moon, so as to be independent of the haze and water vapor and even of the gaseous constituents of the air. It is required to know the measure of solar radiation in free space as an index of the condition of the sun, quite apart from its influence on terrestrial affairs, but secondly it is of great importance and interest to apply this knowledge to promote meteorological inquiries.

Sir John Herschel, who was a pioneer in solar radiation work, proposed to express solar radiation in terms of a unit which he called the actine, which is based on the melting of ice. But by general consent the gram calorie has been adopted as the unit of measurement, and we say that the

¹ MSS. intended for publication and books, etc., intended for review should be sent to Professor J. McKeen Cattell, Garrison-Hudson, N. Y.

¹ Address delivered before the Philosophical Society of Washington, January 3, 1914, as retiring president.